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| 10/646,923 | 08/25/2003 | Hong-gie Hwang | 1293.1884 | 1952 |
| 21171 7590 08/21/2008 STAAS & HALSEY LLP SUITE 700 1201 NEW YORK AVENUE, N.W. WASHINGTON, DC 20005 | | | EXAMINER FORDE, DELMA ROSA | |
| | | | ART UNIT 2828 | PAPER NUMBER |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/646,923

Applicant(s)

HWANG, HONG-GIE

Examiner

DELMA R. FORDE

Art Unit

2828

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 June 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 4-9 and 13-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 4 - 9 and 13 - 17 is/are allowed.
- 6) ☒ Claim(s) 18, 20-22 and 33 - 34 is/are rejected.
- 7) ☒ Claim(s) 19, 23 - 32 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB08)
- Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 18, 20—21 and 33 – 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Kiely (6,151,344) in view of Ogasawara (5,966,159).

Regarding claim 18, Kiely discloses a controller with a laser diode, comprising: and an automatic power control (see Figs. 5 and 6, Character 13) module of the laser diode (see Figs. 5 and 6, Character 12, the reference call "VCSEL") automatically controlling an output power of the laser diode positioned within a laser diode unit by sampling an effective output voltage within a predetermined range (see Column 4, Lines 59 – 67 and Column 5, Lines 1 – 36) from an output power of the laser diode during a automatic power control (see Figs. 5 and 6, Character 13) period and performing proportional-integral (see Fig. 6 Characters 53 and 61, Column 6, Lines 39 –42) processing on an error voltage (it has been held that a recitation with respect to the

manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. (Ex Parte Masham, 2 USPQ F.2d 1647 (1987))) between the effective output voltage (see Fig. 6, Character 62) and a reference voltage (see Figs. 5 and 6, Character 52).

Kiely discloses the claimed invention except for an engine processor module controlling an entire operation of a printer engine. Ogasawara teaches an engine processor module controlling an entire operation of a printer engine. However, it is well known in the art to apply the an engine processor module controlling an entire operation of a printer engine as disclosed by Ogasawara in Column 6, Lines 29 – 56. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was to apply the well known an engine processor module controlling an entire operation of a printer engine as suggested by Ogasawara to the laser of Kiely, because it could be used to control all operation of a printer engine and send the image data for the color together with a one-bit attribute signal for designating whether the printing is to be made with the priority on the resolution or with the priority on the tonality to the printer engine in synchronism with the data transfer see Column 6, Lines 29 – 56 of Ogasawara.

Kiely discloses the claimed invention except for scanning unit. Ogasawara teaches scanning unit. However, it is well known in the art to apply the scanning unit as disclosed by Ogasawara in Column 1, Lines 23 – 28. Therefore, it would have been

obvious to a person having ordinary skill in the art at the time the invention was to apply the well known scanning unit as suggested by Ogasawara to the laser of Kiely, because could be to used to a process of scanning laser beam along a main scan line to conduct first development and then transferring a resulting latent image onto a record sheet on a transfer carrier is repeated four times to conduct multi-color printing see Column 1, Lines 23 – 28 of Ogasawara.

Regarding claim 20, Kiely discloses a controlling a laser diode and connected to a printer engine, comprising: and an automatic power control (see Figs. 5 and 6, Character 13) module of the laser diode (see Figs. 5 and 6, Character 12, the reference call "VCSEL") automatically controlling an output power of the laser diode positioned within a laser by generating an error voltage (it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. (Ex Parte Masham, 2 USPQ F.2d 1647 (1987))) between an output voltage of the laser diode sampled during an automatic power control period and (see Figs. 5 and 6, Character 13) and a reference voltage (see Figs. 5 and 6, Character 52), the output voltage being an effective output voltage within a predetermined range, and performing proportional-integral processing (see Fig. 6 Characters 53 and 61, Column 6, Lines 39 –42) on the error voltage to generate a compensated control voltage (see Fig. 6, Character 62) and applying the compensated control voltage to the

laser diode (see Column 4, Lines 59 – 67 and Column 5, Lines 1 – 36).

Kiely discloses the claimed invention except for an engine processor module controlling an entire operation of a printer engine. Ogasawara teaches an engine processor module controlling an entire operation of a printer engine. However, it is well known in the art to apply the an engine processor module controlling an entire operation of a printer engine as disclosed by Ogasawara in Column 6, Lines 29 – 56. Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was to apply the well known an engine processor module controlling an entire operation of a printer engine as suggested by Ogasawara to the laser of Kiely, because could be used to control all operation of a printer engine and sends the image data for the color together with a one-bit attribute signal for designating whether the printing is to be made with the priority on the resolution or with the priority on the tonality to the printer engine in synchronism with the data transfer see Column 6, Lines 29 – 56 of Ogasawara.

Regarding claim 21, Kiely discloses the automatic power control module (see Figs. 5 and 6, Character 13) comprises: an error voltage generation unit generating an error voltage between an output voltage of the laser diode (see Figs. 5 and 6, Character 12, the reference call "VCSEL") sampled during an automatic power control period (see Figs. 5 and 6, Character 13) and a reference voltage (see Figs. 5 and 6, Character 52)

Regarding claims 33 and 34, Kiely discloses a method of controlling a laser diode and connected to a printer engine, and a computer readable medium having embodied thereon a computer program for automatically controlling an output power of a laser diode, the method comprising: automatically controlling an output power of the laser diode (see Figs. 5 and 6, Character 12, the reference call "VCSEL") by generating an error voltage between an output voltage of the laser diode sampled during an automatic power control period (see Figs. 5 and 6, Character 13) and a reference voltage (see Figs. 1, Character 52), the output voltage being an effective output voltage within a predetermined range (see Column 4, Lines 59 – 67 and Column 5, Lines 1 – 36, it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex Parte Masham, 2 USPQ F.2d 1647 (1987)); and performing proportional-integral processing (see Fig. 6 Characters 53 and 61, Column 6, Lines 39 – 42) on the error voltage to generate a compensated control voltage and applying the compensated control voltage to the laser diode (see Fig. 5 and 6, Character 12, the reference call "VCSEL", see Column 4, Lines 59 – 67 and Column 5, Lines 1 – 36).

Kiely discloses the claimed invention except for controlling an operation of a printer engine. Ogasawara teaches a controlling an operation of a printer engine. However, it is well know in the art to apply the an controlling an operation of a printer engine as discloses by Ogasawara in Column 6, Lines 29 – 56. Therefore, it would

have been obvious to a person having ordinary skill in the art at the time the invention was to apply the well known an controlling an operation of a printer engine as suggested by Ogasawara to the laser of Kiely, because could be used to control all operation of a printer engine and sends the image data for the color together with a one-bit attribute signal for designating whether the printing is to be made with the priority on the resolution or with the priority on the tonality to the printer engine in synchronism with the data transfer see Column 6, Lines 29 – 56 of Ogasawara.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kiely et al (6,151,344) in view of Woodley (2003/0179787 A1),.

Regarding claim 22 Kiely discloses the claimed invention except for analog to digital converter. Woodley teaches providing his device with an analog to digital converter. However, it is well know in the art to apply the analog to digital converter as discloses by Woodley in (see Fig. 3). Therefore, it would have been obvious to a person having ordinary skill in the art at the time the invention was to apply the well known analog to digital converter as suggested by Woodley to the laser of Kiely, because could be use the ADC to converter the laser beam to digital signal to the processor can process the information and could be use the DAC to convert the digital signal to the analog signal to can make a feedback in this device to see (see Fig. 3) of Woodley.

Allowable Subject Matter

Claims 1, 4 – 9 and 13 – 17 are allowed.

Claims 19, 23 – 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 19 recites a laser printer controller structure including the specific structure limitation of the automatic power control module of the laser diode comprises: *an analog-to-digital converter converting the output voltage of the laser diode from an analog form to a digital form; an error voltage generation unit generating an error voltage between a reference voltage and the effective output voltage, which is selected from digital output voltages extracted during the automatic power control period; a control voltage generation unit performing the proportional-integral processing on the effective output voltage to generate a compensated control voltage and generating an effective control voltage using the compensated control voltage; and a digital-to-analog converter converting the effective control voltage from the digital form to the analog form*, which is neither anticipated or disclosed nor suggested in any piece of available prior art, which is neither anticipated nor obvious over the prior art of record.

Claims 23 - 32 recites a printer controller structure including the specific structure limitation of the error voltage generation unit further comprises: *a sampler sampling the digital output voltage from the analog-to-digital converter during the automatic power*

control period; a first comparator setting a first maximum and a first minimum to define an effective range of the digital output voltage of the laser diode, comparing the first maximum and the first minimum with the sampled digital output voltage received from the sampler, determining whether the sampled digital output voltage exists within the effective range, and outputting an effective output voltage; an accumulator accumulating the effective output voltage; and a first divider dividing an accumulated result output from the accumulator by a number of accumulations to calculate an average effective output voltage. The error voltage generation unit further comprises: a multiplier multiplying the average effective output voltage by a predetermined multiplication constant K_m to simplify a decimal point calculation in the proportional-integral processing and outputting a multiplied result; and a subtractor subtracting the reference voltage from the multiplied result to generate an error voltage. The sampler sets the automatic power control period and controls the analog-to-digital converter to perform the conversion of the voltage of the output power only during the automatic power control period, which is neither anticipated or disclosed nor suggested in any piece of available prior art, which is neither anticipated nor obvious over the prior art of record.

Response to Arguments

Applicant's arguments with respect to claims 1, 4 – 9, and 13 – 34 have been considered but are moot in view of the new ground(s) of rejection. Applicant's request

for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DELMA R. FORDE whose telephone number is (571)272-1940. The examiner can normally be reached on M-T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MinSun O. Harvey can be reached on 571-272-1835. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/DELMA R. FORDE/
Examiner, Art Unit 2828

/Minsun Harvey/
Supervisory Patent Examiner, Art Unit 2828